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Foreign Animal Disease Report

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This Issue

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Emergency Programs Activities

Field Investigations. During the first three quarters of fiscal year (FY) 1991 (October 1, 1990, to June 30, 1991), veterinarians from the U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS), and State departments of agriculture conducted 205 investigations of suspect animal diseases in the United States and Puerto Rico to eliminate the possibility that an exotic disease may have been introduced. These investigations included 81 for vesicular conditions, 18 for swine septicemic conditions, 6 for mucosal conditions, 48 for exotic Newcastle disease in pet birds and poultry, 3 for avian influenza, 19 for encephalitic conditions, and 30 for undesignated conditions. Except for exotic Newcastle disease in pet birds, no foreign animal diseases were found.

Exotic Newcastle Disease in Pet Birds. Velogenic viscerotropic Newcastle disease was reintroduced into the United States in pet birds during May. This was the first incursion of the disease here since 1989 (see 17-3: 1). Such outbreaks appear to be associated with birds that are imported without meeting official import health requirements (i.e., smuggled birds). The disease was discovered in 1991 after a pet bird dealer in Dana, IN, received seven 6- to 7-week-old yellow-headed Amazon parrots from a bird dealer in Houston, TX, on May 7.

Three of the seven birds were then sold to a bird dealer in Beecher, IL. These birds developed central nervous system signs soon after arrival in Beecher. They were then transported by an attending veterinarian to her office in Indianapolis, IN. She notified the VS Area Veterinarian in Charge in Indiana of the problem May 12 and 13, and birds that had recently died were submitted for diagnostic evaluation to the National Veterinary Services Laboratories (NVSL) in Ames, IA.

Three other birds received by the Dana dealer died, and two of these were discarded. The remaining bird was frozen and submitted to NVSL, where a Newcastle disease virus was isolated on May 22, 1991.

The Dana dealer sold one of the parrots to a pet owner in Urbana, IL. It was euthanized and submitted to NVSL, where a Newcastle disease virus was isolated on May 21, 1991. The virus was subsequently characterized as velogenic but not viscerotropic.

On May 5, 1991, the Houston dealer had also shipped three young yellow-headed Amazon parrots to a bird dealer at St. Clair Shores, MI. One of these birds died soon afterward. When a second bird died, the Michigan dealer reported the death to State

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and Federal animal health officials. This bird and the surviving bird, which APHIS purchased for diagnostic purposes, were submitted to NVSL.

On May 28, 1991, NVSL reported that birds from Beecher, Dana, and St. Clair Shores were positive for exotic Newcastle disease. The infected and exposed birds at these locations were depopulated as a part of the action necessary to prevent spread of the disease to other pet birds or domestic poultry. (A 1971 introduction of exotic Newcastle disease virus into southern California from infected pet birds resulted in the destruction of nearly 12 million chickens—mostly laying hens—and an expenditure of \$56 million to eradicate. See 15–2: 1.)

Since the infected birds had been isolated from other birds at the Illinois and Michigan sites, birds remaining on the premises were quarantined and tested three times, 7–10 days apart, to determine whether any were carrying Newcastle disease virus. All birds remained negative.

On May 24, 1991, cloacal swab specimens were collected from birds at the apparent source of the infection, the residence of the Houston dealer. Two days later, birds on a separate premises, 6 miles from the dealer's residence, were swabbed. All swabs were submitted to NVSL. Because swabs from the birds at the residence were positive for exotic Newcastle disease, those birds were depopulated. Birds at the second premises of the Houston dealer were swabbed four times and remained negative. All infected premises were cleaned and disinfected and not used to house birds for 15–30 days following disinfection.

Birds that had been moved from each of the infected premises were traced, quarantined, and swabbed twice, 7–10 days apart. All birds on these premises were negative for Newcastle disease.

The occurrences in Texas, Indiana, Illinois, and Michigan bring to six the total number of cases of exotic Newcastle disease reported in pet birds in 1991. Previous cases were confirmed in California and Nevada. There have not been any positive cases of exotic Newcastle disease in commercial poultry in the United States since 1974. Since 1971, outbreaks have occurred in pet birds each year except for 1976, 1978, and 1990.

Exotic Newcastle Disease Awareness Campaign. Each year in late December, APHIS disseminates information to bird dealers and owners, advising them of precautions they should take to ensure that birds which they import have met APHIS health requirements. In addition, the U.S. Department of the Interior's Fish and Wildlife Service conducts enforcement activities to deter individuals from bringing into this country birds that do not meet Federal import requirements.

Test Exercise. The VS Emergency Programs Staff and Southeast Regional Emergency Animal Disease Eradication Organization conducted an emergency preparedness test exercise in Florida, July 22–26, 1991. An outbreak of the fictitious disease "nada" (Spanish for "nothing") was designed to simulate African horse sickness. In Gainesville, a task force of Florida State officials and Federal personnel was assembled. All regions of the United States and the Governments of Canada and Mexico were drawn into the exercise through simulated movements of equidae from infected or exposed premises. The expertise of numerous APHIS units was tapped to provide technical support to manage such issues as vector identification and control, environmental impact of such control, vaccination of susceptible equine populations, compliance with applicable laws, and economic and budgetary concerns.

Representatives of the equine industry helped plan and execute the exercise. Press releases, electronically transmitted messages, informational handout materials, and press conferences served to inform the public and other governments of the exercise. A followup evaluation of the exercise took place August 6 in Hyattsville, MD.

The second in a series of exercises planned to test emergency responses to a foreign animal disease outbreak will take place next year. A different disease will be simulated, and a different region will be targeted for each exercise.

Training Workshops and Meetings. From April 29 to May 10, 22 State and Federal veterinarians completed a training course on foreign animal diseases at Ames, IA, and Plum Island, NY.

Regional Emergency Animal Disease Eradication Organization workshops were held during the weeks of April 14 in Tampa, FL, and May 26, in Columbus, OH.

A course for State and Federal veterinarians entitled "Foreign Animal Diseases: Threats and Implications" was held at the North Carolina State University College of Veterinary Medicine, July 9–13.

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Foreign Animal Disease Update

This article summarizes information on disease surveillance taken from various sources, including bulletins of the Office International des Epizooties (OIE), primarily covering January–April 1991. Slightly more than half (51.8 percent) of the reports were for outbreaks that occurred during 1990.

The OIE received 591 reports describing 3,785 outbreaks of List A diseases for the first 4 months of 1991: 1,369 (36 percent) from Europe, 1,239 (33 percent) from the Americas, 628 (17 percent) from Africa, and 549 (14 percent) from Asian countries. (The List A diseases are foot-and-mouth disease, swine vesicular disease, vesicular stomatitis, rinderpest, peste des petits ruminants, contagious bovine pleuropneumonia, lumpy skin disease, Rift Valley fever, bluetongue, sheep pox and goat pox, African horse sickness, African swine fever, hog cholera, Teschen disease, fowl plague, and Newcastle disease.) More than half the outbreaks were due to foot-and-mouth disease, sheep pox, or goat pox.

Among the **foot-and-mouth disease** (FMD) virus types identified, 38 percent were O; 9 percent, A; 5 percent, Asia 1; 2 percent, SAT 2; 0.6 percent, C; and 0.1 percent, SAT 1. Approximately 45 percent were untyped.

In Africa, Algeria and Egypt reported 46 and 34 outbreaks of type O FMD, respectively, for December 1990 and the first quarter of 1991. The March outbreak in Egypt occurred in El-Sharkia and affected only buffalo. Morocco reported four outbreaks of type O FMD in Taza and Berkine provinces in June. The first case in the outbreak was thought to have occurred May 12. Mali reported untyped FMD outbreaks for December 1990 and February 1991 affecting a total of 353 cattle. Cote-d'Ivoire continued to report type SAT 2 FMD from its central region, near Bouake. Togo reported two outbreaks of untyped FMD during February in Mandouri and Mango. The Togolese outbreaks involved 10,500 cattle; 7 died of the disease, and 25 were slaughtered. In November 1990, Senegal identified an FMD outbreak in Kaffrine. Outbreaks occurring in Nigeria for the first quarter of 1991 were untyped and affected only cattle. Chad submitted reports for

an unspecified number of untyped FMD outbreaks in January and February. For November 1990, Uganda identified the presence of FMD types O, A, C, SAT 1, and SAT 2. Kenya had an outbreak of type A in cattle during January. FMD type SAT 2 was identified in Burundi in February.

In South America, Brazil reported the presence of FMD types O, A, and C for the last 2 months of 1990. There were also 336 outbreaks of untyped FMD at various locations throughout that country from September 1990 to January 1991. Argentina reported 227 outbreaks of FMD during October 1990 and January and February 1991; 42 were type A, 1 was type C, and 24 were type O. The remaining 160 outbreaks were untyped, involved 113,951 cattle, sheep, goats, and pigs, and caused 159 deaths. Colombia reported 64 outbreaks of type A for December 1990 through March 1991 and 20 of type O for the first quarter of 1991. Venezuela also reported FMD types A and O in cattle for the last half of 1990. Ecuador reported three outbreaks of type A and three of type O for the end of 1990. During January and February, Paraguay identified two outbreaks of type O FMD in San Pedro and Presidente Hayes.

In Asia (the Middle East, Asia proper, and the Far East), Israel reported 2 outbreaks of FMD type O in Kineret and Golan during March affecting 229 cattle and 200 sheep. The last FMD outbreak reported from Israel was in April 1990. During January and February of 1991, Syria reported 5 outbreaks of untyped FMD from Homs and Raqqa, involving a total of 20 cattle and sheep. Iran belatedly reported a total of 42 outbreaks of untyped FMD and the presence of type O FMD for July through September 1990. Type O FMD was also identified in Bahrain during March 1991. Oman identified 118 outbreaks of type O FMD for October 1990 through February 1991. Goats were the principal species affected, but cattle and sheep were also involved. In all, 5,533 animals were affected; 38 died. The World Reference Laboratory for Foot-and-Mouth Disease, Pirbright, UK, also diagnosed type O FMD in specimens from Oman for March and April 1991. Saudi Arabia reported FMD type O activity in cattle for February. FMD types O, A, Asia 1, and untyped FMD viruses were isolated in Pakistan December 1990 through March 1991. Type C FMD was reported present in Pakistan December 1990 through February of this year. A total of 8 outbreaks of FMD type O were reported in cattle in Sri Lanka for January, affecting 142 animals; 3 died. Type O FMD was also isolated from Sri Lankan buffalo samples submitted to the Pirbright laboratory in December 1990. Myanmar reported 14 untyped FMD outbreaks occurring from December 1990 through March 1991. During the last half of 1990, Thailand reported 65 outbreaks of type Asia 1, 5 of type O, 5 of type A, and 14 of untyped FMD. Type O FMD activity was also recorded in Thailand for the first 2 months of 1991.

Turkey reported 240 outbreaks of type O FMD December 1990 through March 1991. A total of 304,674 sheep and 165,378 cattle were involved in the Turkish outbreaks; 1 animal died. The U.S.S.R. belatedly reported a July 1990 outbreak of type O FMD in Tadjikistan involving 270 swine, all of which were either destroyed or slaughtered for human consumption. The U.S.S.R. also reported bovine type O FMD on a private dairy farm in Kazakhstan during April 1991. All 161 infected and exposed cattle were destroyed, all susceptible animals at risk in the control zone surrounding the affected farm were vaccinated, and live animals and animal products were not permitted to leave the control zone.

All 13 outbreaks of vesicular stomatitis serotype New Jersey (VS-NJ) reported from Mexico between November 1990 and March 1991 were from the states of Chiapas and Veracruz. The Pan-American Foot-and-Mouth Disease Center, Rio de Janeiro, Brazil, diagnosed VS-NJ outbreaks in El Salvador and Honduras for October and November

1990 and in Nicaragua and Costa Rica during October 1990. Panama reported 6 outbreaks of VS-NJ affecting 259 cattle and an outbreak of Indiana serotype (VS-IN) affecting 72 cattle in the province of Chiriqui and 5 outbreaks of untyped vesicular stomatitis involving 1,046 cattle in the provinces of Chiriqui, Herrera, and Panama.

Colombia reported 231 outbreaks of VS-IN affecting 13,616 cattle and 112 outbreaks of VS-NJ affecting 4,453 cattle for the period December 1990 through March 1991.

Swine vesicular disease was diagnosed in Italy during January, February, and April. The outbreaks in January and February in Messina affected 81 pigs. One died, and the remaining animals were destroyed. The two outbreaks in April on a family-run farm in Naples resulted in the destruction of all four infected pigs.

Rinderpest (RP) affected 5,000 cattle (most of which were young) in the Awash district of Ethiopia's Harege province during April. No animals died of the disease. RP killed 30 cattle in Kenya during December 1990; no information was received on the number of animals affected. The government laboratory in Kenya also diagnosed RP during April by employing an agar gel immunodiffusion test to specimens from five herds in the Rift Valley province. A January outbreak in the Al Bunraymi region of Oman killed one of the three infected cattle.

Mali reported that an outbreak of **peste des petits ruminants** (PPR) at Ghourma-Rharous killed 32 of 460 infected animals. An outbreak in Senegal during February killed 100 animals. Sheep and goats had PPR in Cote-d'Ivoire during the first 3 months of 1991. Oman reported 15 outbreaks of PPR for October 1990 through February 1991.

Guinea reported **contagious bovine pleuropneumonia** (CBP) activity December 1990 through March 1991. Cote-d'Ivoire identified two outbreaks of CBP in December 1990 and March 1991, and Kenya reported eight outbreaks for December 1990 through February 1991. Nigeria reported CBP outbreaks for January and December 1990 and January, February, and April 1991.

In Europe, Italy, Portugal, and Spain continue to report CBP. There were 13 outbreaks of CBP in Italy during the first 3 months of 1991: 9 at Bergamo, 2 at Padua, 1 at Torino, and 1 at Udine. A total of 4,387 cattle were affected; 189 were slaughtered, and 1 died. Portugal had earlier reported 227 outbreaks of CBP affecting 1,608 cattle during September and October 1990, including 665 destroyed and 365 slaughtered for food. Spain reported eight outbreaks of CBP in Santander during December 1990 and January 1991 and one outbreak in Oviedo during February.

Senegal reported three outbreaks of **lumpy skin disease** (LSD) for October and December 1990 and February 1991. The 1990 outbreaks at Poppinguine and Kolda involved 34 animals. Nigeria, Mozambique, Swaziland, and South Africa also reported LSD during the first quarter of 1991. Chad identified LSD outbreaks in January and February 1991. From December 1990 through February 1991, Kenya reported seven outbreaks of LSD. Zambia had 22 outbreaks of LSD, and Zimbabwe had 95 December 1990 through April 1991. Botswana reported 3 outbreaks in March that affected 221 cattle and killed 6. Madagascar identified 29 LSD outbreaks from October to December 1990.

Rift valley fever was reported from three African nations: Mozambique during the first quarter of 1991, Zambia during January, and South Africa during March and February.

Bluetongue affected nine animals in Chiping and Rusape, Zimbabwe, during January and April 1991. South Africa and the United States reported the presence of bluetongue in February 1991.

Turkey reported 589 outbreaks of **sheep and goat pox** (SGP) for November 1990 through March 1991. Of the 1,852,778 affected animals, 1,889 died, 8 were destroyed, and 95 were slaughtered for food. Algeria's 30 outbreaks of SGP from December 1990 through March 1991 affected more than 120 sheep and goats. Senegal reported SGP for the period of September 1990 through February 1991. In March 1991, Israel reported outbreaks in Golan and Ramia involving 73 animals; 17 died. From November 1990 through February 1991, Oman had 10 outbreaks of SGP affecting 238 animals, and Syria had 29. Pakistan reported the presence of SGP December 1990 through March 1991, and Sri Lanka reported three outbreaks in January. Of the 234 affected goats in Sri Lanka, 68 died.

All reports of **African horse sickness** (AHS) during the first 4 months of 1991 were from Africa: Nigeria, Sudan, Mozambique, South Africa, and Zimbabwe. Morocco had previously reported 72 outbreaks of AHS for September through December 1990, in which 396 of 61,557 affected equids were destroyed in efforts to eliminate the disease, and 39 died of it. Senegal also reported AHS in 1990; 35 outbreaks in that country resulted in the death of 666 animals.

African swine fever (ASF) was reported from four African and three European nations during 1990 and the first 3 months of 1991. Uganda described 8 outbreaks in 1990 involving approximately 14,200 pigs; 208 died, 3 were destroyed, and 290 were slaughtered for food. Also during 1990, Senegal reported an outbreak of ASF at Ziguinchor that killed 28 pigs. Zaire reported the disease for November 1990. Mozambique had ASF January through March 1991. Italy reported ASF in Sardinia for the first 3 months of 1991. In Portuguese outbreaks of the disease in Serpa during January and February, all 177 affected animals either died or were destroyed. Spain reported a total of 51 outbreaks of ASF from its southern regions. Of the 8,846 pigs affected, 151 died due to the disease, and 8,695 were destroyed in efforts to control its spread.

Outbreaks of **hog cholera** (HC) continue to be reported from European countries, among them Belgium (11), Germany (9), Austria (16), Italy (8), Czechoslovakia (13), and Yugoslavia (25). The U.S.S.R. reported 40 outbreaks for July 1990 through March 1991 affecting 101,145 pigs. Of these, 13,347 were destroyed, 688 were slaughtered, and 10,723 died. Asian outbreaks of HC included Myanmar (1), South Korea (10), and Taiwan (224). Of 26,261 swine affected in the Taiwanese outbreaks, 515 died as a result of the disease, and 892 were destroyed. Outbreaks of HC in the Americas were reported from Mexico (16), Colombia (53), Venezuela (3), Brazil (28), Paraguay (1), Uruguay (4), and Argentina. Argentina reported the presence of HC for October and November 1990 and January and February 1991. In Africa, Madagascar reported 10 outbreaks of HC in which 220 swine died, and the Congo reported 1 outbreak in which 13 swine died.

Fowl plague was reported in Pakistan during the first 4 months of 1991, and in Senegal during the first 3 months.

In Africa, Algeria reported 6 outbreaks of **Newcastle disease** (ND) for December 1990 through March 1991, at Tipaza, El Bayadh, Skida, and Bejaia, affecting 54,200 birds, of which 300 died. Outbreaks were also reported by Egypt, Mali, Nigeria, Kenya, Malawi,

South Africa, and Madagascar. Cote-d'Ivoire, Senegal, Zaire, Uganda, Zambia, and Mozambique reported the presence of ND but no outbreaks. In the Americas, Mexico reported outbreaks of ND during December 1990 and January and February 1991 affecting 6,100 birds, of which 255 died. Brazil reported 42 outbreaks of ND for September 1990 through January 1991, and Colombia recorded the presence ND for the first quarter of 1991. In Asia, Japan reported seven outbreaks of ND from Kagoshima, Kawakita, Kumamoto, Fukuoka, and Nagasaki. Of the 844 birds affected, 337 died of the disease, and the rest were destroyed. Syria had 7 outbreaks of ND, Iran had 42, and Hong Kong had 1.

Yugoslavia identified 56 outbreaks of ND, and the U.S.S.R. identified 2. Turkey reported 22 outbreaks of ND affecting 373,721 chickens for November 1990 and January through March 1991.

In Asia, South Korea's outbreaks of **viscerotropic velogenic Newcastle disease** (VVND) affected 74,880 chickens in South Korea, killing 58,930 of them. A total of 597 birds died of VVND in 13 outbreaks in Myanmar during the first quarter of 1991. Taiwan reported two outbreaks of VVND at Tainan City involving 19,000 birds. Indonesia had VVND during January, February, and March. In Africa, Sierra Leone reported VVND every month of 1990, Botswana reported 2 outbreaks, and Mauritius reported 10.

In Europe, **pigeon paramyxovirus** affected 73,700 laying hens in 5 outbreaks in Northern Ireland and 83,500 laying hens in 2 outbreaks in Cork and Monaghan counties, Republic of Ireland. In Northern Ireland, a total of 30 chickens died of the disease; the remainder were slaughtered. Area restrictions placed on the chickens in the Republic of Ireland to prevent further spread were removed May 6. The disease had been reported as velogenic viscerotropic Newcastle disease in the OIE bulletin.

The Food and Agriculture Organization of the United Nations reported 12,068 cases of New World **screwworm** (*Cochliomyia hominivorax*) in Libya during 1990. Three cases were reported there during January 1991, two in February, and one in April. No new cases have been reported from north Africa since April. Because no more larvae cases appeared, the eradication phase of Libya's screwworm eradication campaign ended during October 1991. A total of 880 million sterile male screwworm flies have been released thus far in north Africa. (See also 18-4: 6, 18-2: 6, and 17-4: 7.) The screwworm eradication program in Belize has identified no new cases, and the program in Guatemala has identified only seven (see 18-4: 6).

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This article reviews the common signs of several foreign diseases that are rarely if ever mentioned in the more widely read veterinary literature. Although considered minor risks, these diseases have the potential to cause significant damage if they should enter and spread in the United States. APHIS asks that any suspected occurrence of a minor disease be brought to the attention of the nearest Federal or State animal health official so that immediate arrangements can be made for a diagnostic investigation.

Besnoitiosis¹. *Besnoitia besnoiti*, a protozoal parasite of cats, is endemic in Africa, southern Europe, the U.S.S.R., Asia, and South America. Cattle are intermediate hosts, typically having an initial fever, photophobia, and anasarca, followed by seborrhea, alopecia, and sometimes death. Although less than 10 percent of infected cattle die from this disease, besnoitiosis causes weight loss, abortion, male sterility, and skin changes that render the hides of little value for leathermaking.

Chuzan disease². An epidemic of hydranencephaly and arthrogryposis in calves in Japan from November 1985 to April 1986 has been attributed to Chuzan virus, a member of the palyam subgroup of genus *Orbivirus*. Rates of occurrence of the disease among beef cattle ranged from 10 to 20 percent in different geographical locations in southern Japan. Chuzan antibodies were found in cattle, goats, and sheep but not in horses, pigs, or chickens.

Elaphostrongylosis³. *Elaphostrongylus cervi* is a metastrongylid parasite of red deer (*Cervus elaphus*), maras (*Alta wapiti*), wapiti (*Elaphus canadensis*), sika deer (*C. nippon*), roe deer (*Capreolus capreolus*), reindeer (*Rangifer tarandus tarandus*), caribou (*R. t. caribou* and *R. t. groenlandicus*), moose (*Alces alces*), elk (*Cervus canadensis*), and fallow deer (*Cervus dama*). Molluscs, slugs, frogs, and predators of frogs are suspected intermediate hosts. In its mammal host, *E. cervi* invades the intermuscular connective tissue, particularly in the breast, thorax, and back, and the central nervous system. *E. cervi* has been reported from Scotland, Denmark, Poland, Sweden, Austria, the Netherlands, Czechoslovakia, Norway, the U.S.S.R., New Zealand, and Canada.

Equine encephalosis⁴. Caused by a South African virus of the genus *Orbivirus*, equine encephalosis is characterized by rapid onset, fever, excited behavior, incoordination, and death.

Israel turkey meningoencephalitis⁵. The virus causing this disease, a *Flavivirus* transmitted by biting midges and mosquitoes, was first isolated from domestic turkeys in Israel during September 1959. The disease has also been reported from South Africa. Signs included drooped wings, staggering gait, and greenish diarrhea, followed by bilateral paralysis. Progressive drop in egg production was noted in all affected flocks. Recovered turkeys were immune.

Jembrana disease⁶. Jembrana is a transmissible infectious disease of unknown cause in Balinese and Sumatran cattle, characterized by fever of 40 °C to 42 °C (104 °F to 107.6 °F) for 3 to 6 days, nasal discharge, increased salivation, diarrhea, and mucosal erosions of the lips, gums, tongue, and pharynx. Pregnant animals may abort.

Porcine epidemic diarrhea (PED)⁷. This disease was first reported in 1971 in feeder pigs in England. The disease agent, a *Coronavirus*, caused signs similar to those of transmissible gastroenteritis, except pigs under 4 to 5 weeks of age did not become sick. The disease subsequently has been reported from Belgium, Germany, France, the Netherlands, Switzerland, Bulgaria, and Taiwan.

Clinical signs and morbidity and mortality rates have varied. Signs range from watery diarrhea, possibly preceded by vomiting in almost all swine of all ages on a premises, to depression, anorexia, and vomiting. Mortality in piglets up to 1 week of age has averaged 50 percent but in some instances approached 90 percent. Older animals recovered after about a week. Some infections remained subclinical. A few sows have died suddenly; necropsies of these individuals revealed back muscle necrosis. After an outbreak, the virus disappears except when susceptible animals are regularly added to the herd.

Schistosomiasis of cattle⁸. The trematode blood parasites *Schistosoma bovis*, *S. mattheei*, and *S. japonicum* cause signs in cattle ranging from weight loss to severe diarrhea, anemia, and hematuria. The adult parasites are found in the portal and mesenteric blood vessels. The intermediate stages develop in snails. Free-swimming

Schistosoma cercariae invade cattle thorough the mucous membranes and skin. The disease has been reported from Morocco, Taiwan, China, Senegal, Zimbabwe, and Nigeria.

Swine blue eye disease⁹. Caused by a *Paramyxovirus*, swine blue eye disease has been reported only in Mexico. The frequency of signs has varied with age. From 1 to 10 percent of affected piglets have had either unilateral or bilateral corneal opacities, often resolving spontaneously. Corneal opacities have been observed in sows in affected farrowing houses. Progressive nervous system signs (ataxia, weakness, rigidity mainly in the hind legs, muscle tremors, abnormal posture), fever, and sometimes constipation or diarrhea were seen in piglets. During the first few years after the disease appeared, affected piglets usually died within 48 hours of the onset of clinical signs, but in later cases, death sometimes occurred after 4 to 6 days. Nervous system signs were rare in weaned pigs infected at more than 30 days of age, but these animals had transient moderate anorexia, fever, sneezing, and coughing. Since 1983, 20-percent mortality with severe central nervous system signs have been observed in pigs weighing 33–100 lb (15–45 kg). Increased rates of return to estrus, mummified fetuses, and some abortions and stillbirths have been attributed to this disease. Up to 40 percent of boars on affected premises have had reduced fertility associated with enlarged testicles and epididymides.

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Porcine Reproductive and Respiratory Syndrome

At a seminar organized by the Commission of the European Communities (EEC) in Brussels, Belgium, April 29 and 30, 1991, European and American scientists presented research results on a new swine disease called “porcine reproductive and respiratory syndrome” (PRRS). Although it is similar to the “mystery pig disease” that has been reported in the United States since 1987 (see 17–3: 1), EEC experts agreed that infections of herds in Europe were not caused by imports of pigs from the United States or Canada. The following 10 paragraphs were adapted from a factsheet on the symposium, published May 16, 1991, by the European Parliament, Division for Agriculture, Fisheries, and Rural Development, Strasbourg, France.

In November 1990, a new pig disease was reported in the districts of Borken, Coesfeld, and Steinfurt, Germany. Losses of piglets and pregnant sows had affected about 600 herds in Nordrhein–Westfalen by mid-February 1991. Several cases were also identified in Niedersachsen. Spreading to the north and west, the disease affected about 1,100 German pig holdings and 150 Dutch pig holdings by the beginning of March. (There are about 120,000 pig holdings in the Federal Republic of Germany and about 40,000 pig holdings in the Netherlands.) Belgium had 34 cases in 5 provinces by the end of March. By the end of April, about 2,600 herds were affected in Nordrhein–Westfalen and 1,630 herds in the district of Muenster, Germany.

Outbreaks on 2 premises in Spain that were attributed to pigs brought from Germany resulted in the slaughter of 1,000 pigs and the establishment of a sanitary buffer zone around the affected holdings.

Clinical Signs. In affected swine herds, the first signs of PRRS are anorexia, fever of up to 41 °C (106 °F), and cyanosis and edema of the ears, tail, and teats. In pregnant swine, reproductive disease follows. From 1 to 20 percent of affected sows farrow prematurely, and up to 2 percent abort during the late stages of gestation. Affected sows have an influenzalike illness with a sudden death rate of 1 or 2 percent. Farrowings at term produce either stillborn fetuses or mixtures of live and dead piglets. Some of the dead are mummified. Surviving piglets are weak and may die within 7 days.

Transmission. There has been no evidence of the spread of PRRS by people, semen, or the movement of swine to slaughtering establishments. However, there is evidence of airborne spread to a distance of at least 20 km (12 miles).

Control. On February 25, 1991, EEC veterinarians recommended that, beginning March 4, 1991, no swine be exported from areas of Germany and the Netherlands where, during the previous 8 weeks, there have been unusual numbers of abortions or premature farrowings in sows or death and weakness in young piglets not attributable to known diseases. Swine exports from unaffected areas of Germany

and the Netherlands would be permitted from herds that have not received swine from a contaminated area during the previous 30 days. The exported swine would be accompanied by a certificate stating that the swine were examined by a veterinarian not more than 48 hours before exportation and were found to be normal.

By April 25, 1991, the initially identified PRRS "protection zones" were extended to include any municipality where at least 10 cases have been identified in a 4-week period. For export restriction to be lifted, 4 weeks should lapse without a new case being reported. Germany, the Netherlands, and Belgium were asked to include the following in their PRRS preventive measures:

Destroy all placentas, fetuses, and dead piglets from all abortions.

Clean and disinfect farrowing facilities after each abortion, early farrowing, or normal farrowing.

Install disinfecting procedures at the entrances and exits of buildings housing breeding swine.

Prohibit the movement of affected breeding swine to uncontaminated holdings.

As far as trade within the EEC is concerned, a single case of PRRS in breeding pigs would justify a ban on swine exports from the affected municipality. Trade activities related to the production and slaughter of swine would be restricted from municipalities where at least two holdings are affected by PRRS. Transport to production or slaughtering facilities in "sealed means of transport" is recommended for pigs from Nordrhein-Westfalen and Niedersachsen. Germany, the Netherlands, and Belgium were asked to provide the EEC with a weekly list of municipalities where one or more swine holdings are affected by PRRS.

Additional actions being considered by the EEC countries include immediate assistance to ongoing research programs to improve scientific knowledge of PRRS, and longer term support for research, prevention, and control. An EEC veterinary fund was announced on June 26 to support, among other things, programs to prevent and control serious infectious animal diseases that pose a threat to human health. PRRS appears to fall within the scope of the EEC definition.

To alert animal health officials of any new occurrence of PRRS, EEC member states have been asked to organize early warning systems. Member states are to report the health situation of their swine herds to the EEC. A second EEC-sponsored seminar on PRRS is tentatively planned for November 1991.

(Dr. Mark P. Dulin, Veterinary Attache, United States Mission to the European Communities, Brussels, Belgium)

Subsequent to the April 1991 symposium, the United Kingdom reported PRRS in nine herds in the Humberside and Durham areas of northeastern England.

Researchers at the DLO-Central Veterinary Institute in Lelystad, the Netherlands, have isolated the cause of so-called "blue-ear disease," which causes abortion in sows in the late stage of gestation. They have named the micro-organism the "Lelystad agent." Eight sows that were experimentally infected with the agent developed the signs of PRRS: loss of appetite, cyanotic ear tips, abortion, and delivery of dead or weak piglets. Antibodies for the Lelystad agent have been found in the blood of sows recovered from "blue-ear disease." The Dutch researchers have confirmed that outbreaks of PRRS in the UK were caused by the agent that has affected swine on the European continent.

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